



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P O Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

46915 7590 11/18/2009

KONRAD RAYNES & VICTOR, LLP.
ATTN: INT77
315 SOUTH BEVERLY DRIVE, SUITE 210
BEVERLY HILLS, CA 90212

EXAMINER	
AHMED, SALMAN	
ART UNIT	PAPER NUMBER
2476	DATE MAILED: 11/18/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,349	03/31/2004	Navneet Malpani	P18437	8289

TITLE OF INVENTION: LOAD BALANCING AND FAILOVER

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	02/18/2010

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571) 273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

46915 7590 11/18/2009
KONRAD RAYNES & VICTOR, LLP.
ATTN: INT77
315 SOUTH BEVERLY DRIVE, SUITE 210
BEVERLY HILLS, CA 90212

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)

(Signature)

(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,349	03/31/2004	Navneet Malpani	P18437	8289

TITLE OF INVENTION: LOAD BALANCING AND FAILOVER

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	02/18/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
AHMED, SALMAN	2476	370-230000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

"Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY AND STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): Individual Corporation or other private group entity Government

4a. The following fee(s) are submitted:

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- Issue Fee
- Publication Fee (No small entity discount permitted)
- Advance Order - # of Copies _____

- A check is enclosed.
- Payment by credit card. Form PTO-2038 is attached.
- The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

5b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
- b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS; SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P O Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,349	03/31/2004	Navneet Malpani	P18437	8289
46915	7590	11/18/2009		
EXAMINER				AHMED, SALMAN
ART UNIT				PAPER NUMBER
2476				DATE MAILED: 11/18/2009

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 797 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 797 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No. 10/815,349	Applicant(s) MALPANI ET AL.
	Examiner SALMAN AHMED	Art Unit 2476

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTO-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to Amendment filed on 7/8/2009.
2. The allowed claim(s) is/are 1, 5, 7, 9, 10, 12-16, 20, 22, 24, 25, 27-31, 35, 37, 39, 40 and 42-45 (Currently renumbered to 1-27 respectively).

3. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some* c) None of the:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached 1) hereto or 2) to Paper No./Mail Date _____.
 - (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. Notice of References Cited (PTO-892)
2. Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____.
4. Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. Notice of Informal Patent Application
6. Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. Examiner's Amendment/Comment
8. Examiner's Statement of Reasons for Allowance
9. Other _____.

/Salman Ahmed/
Primary Examiner, Art Unit 2476

Allowable Subject Matter

1. Claims 1, 5, 7, 9, 10, 12-16, 20, 22, 24, 25, 27-31, 35, 37, 39, 40 and 42-45 are allowed.

Reason for Allowance

2. The following is an examiner's statement of reasons for allowance:

The prior art of record does not teach the following:

In regards to claim 1, the prior art does not teach receiving input parameters of a list of data paths in a network adapter team, a total number of bytes transferred across the data paths in the network adapter team, a load balancing share of each data path, and a number of bytes transferred on each data path, wherein the load balancing share represents a percentage of a total read or write workload that a given data path in the network adapter team can take, wherein the load balancing share for at least one data path is different for a read workload and a write workload, wherein the load balancing share is specified by a user; for each data path in a network adapter team, computing a load balancing value by: dividing the total number of bytes by the number of bytes transferred on the data path to generate a first value; and multiplying the first value by the load balancing share of the data path; determining a maximum value of the computed load balancing values; and selecting a data path with the maximum value for use in routing data.

In regards to claim 5, the prior art does not teach receiving input parameters of a list of data paths in the network adapter team, a total number of bytes transferred by the network adapter team in a last time frame, a load balancing share of each data

path in the last time frame, and a number of bytes transferred on each data path in the last time frame; computing an actual load balancing share for each data path in a network adapter team by dividing the number of bytes transferred on that data path by a total number of bytes transferred by the network adapter team in the last time frame; computing a difference load balancing value for each data path in the network adapter team by subtracting the load balancing share of the data path from the actual load balancing share of the data path; for each data path, determining whether the load balancing share for the data path in the last time frame is less than the actual load balancing share for the data path; and in response to determining that the load balancing share for the data path in the last time frame is less than the actual load balancing share for the data path; and in response to determining that the load balancing share is less than the actual load balancing share, adjusting the load balancing share of the data path by: determining whether a difference between the load balancing share and the actual load balancing share is less than a change threshold; and in response to determining that the difference between the load balancing share and the actual load balancing share is less than the change threshold, reducing the load balancing share of the data path; selecting another data path based on the difference load balancing value of each data path; and increasing the load balancing share of the selected data path.

In regards to claim 12, the prior art does not teach intercepting a command issued to a target; determining whether a mode is failover mode or failover and load balancing mode, wherein a first network adapter in a network adapter team is used to route data to the target and a second network adapter in the network adapter team is quiescent with respect to the target in the failover mode, and wherein the first network

adapter and the second network adapter are used to route data to the target in the failover and load balancing mode; in response to determining that the mode is the failover and load balancing mode, working with a load balancing component to perform load balancing based on load balancing shares of data paths in the network adapter team; determining whether the command is capable of being routed through a first network adapter in the network adapter team to the target; routing the command through the first network adapter in response to determining that the command is capable of being routed through the first network adapter; routing the command through a second network adapter in the network adapter team in response to determining that the command is not capable of being routed through the first network adapter; and determining whether to switch between the failover mode and the failover and load balancing mode based on the load balancing shares of data paths between the network adapters in the network adapter team and the target, wherein, when one data path has a hundred percent load balancing share, then failover mode is used.

In regards to claim 16, the prior art does not teach receive input parameters of a list of data paths in a network adapter team, a total number of bytes transferred across the data paths in the network adapter team, a load balancing share of each data path, and a number of bytes transferred on each data path, wherein the load balancing share represents a percentage of a total read or write workload that a given data path in the network adapter team can take, wherein the load balancing share for at least one data path is different for a read workload and a write workload, wherein the

load balancing share is specified by a user; for each data path in a network adapter team, compute a load balancing value by: dividing the total number of bytes by the number of bytes transferred on the data path to generate a first value; and multiplying the first value by the load balancing share of the data path; determine a maximum value of the computed load balancing values; and select a data path with the maximum value for use in routing data.

In regards to claim 20, the prior art does not teach receive input parameters of a list of data paths in the network adapter team, a total number of bytes transferred by the network adapter team in a last time frame, a load balancing share of each data path in the last time frame, and a number of bytes transferred on each data path in the last time frame; compute an actual load balancing share for each data path in a network adapter team by dividing the number of bytes transferred on that data path by a total number of bytes transferred by the network adapter team in the last time frame; compute a difference load balancing value for each data path in the network adapter team by subtracting the load balancing share of the data path from the actual load balancing share of the data path; for each data path, determine whether the load balancing share for the data path in the last time frame is less than the actual load balancing share for the data path; and in response to determining that the load balancing share is less than the actual load balancing share, adjust the load balancing share of the data path by: determining whether a difference between the load balancing share and the actual load balancing share is less than a change threshold; and in response to determining that the difference between the load balancing share

and the actual load balancing share is less than the change threshold, reducing the load balancing share of the data path; selecting another data path based on the difference load balancing value of each data path; and increasing the load balancing share of the selected data path.

In regards to claim 27, the prior art does not teach a first network adapter in a network adapter team; a second network adapter in the network adapter team; a failover component; a load balancing component; and circuitry, in the failover component coupled to a bus, operable to: intercept a command issued to a target; determine whether a mode is failover mode or failover and load balancing mode, wherein the first network adapter is used to route data to the target and the second network adapter is quiescent with respect to the target in the failover mode, and wherein the first network adapter and the second network adapter are used to route data to the target in the failover and load balancing mode; in response to determining that the mode is the failover and load balancing mode, work with a load balancing component to perform load balancing based on load balancing shares of data paths in the network adapter team; determine whether the command is capable of being routed through the first network adapter to the target; route the command through the first network adapter in response to determining that the command is capable of being routed through the first network adapter; route the command through the second network adapter in response to determining that the command is not capable of being routed through the first network adapter; and determine whether to switch between the failover mode and the failover and load balancing mode based on the load balancing

shares of data paths between the network adapters in the network adapter team and the target, wherein, when one data path has a hundred percent load balancing share, then failover mode is used.

In regards to claim 31, the prior art does not teach receive input parameters of a list of data paths in a network adapter team, a total number of bytes transferred across the data paths in the network adapter team, a load balancing share of each data path, and a number of bytes transferred on each data path, wherein the load balancing share represents a percentage of a total read or write workload that a given data path in the network adapter team can take, wherein the load balancing share for at least one data path is different for a read workload and a write workload, wherein the load balancing share is specified by a user; for each data path in a network adapter team, compute a load balancing value by: dividing the total number of bytes by the number of bytes transferred on the data path to generate a first value; and multiplying the first value by the load balancing share of the data path; determine a maximum value of the computed load balancing values; and select a data path with the maximum value for use in routing data.

In regards to claim 35, the prior art does not teach receive input parameters of a list of data paths in the network adapter team, a total number of bytes transferred by the network adapter team in a last time frame, a load balancing share of each data path in the last time frame, and a number of bytes transferred on each data path in the last time frame; compute an actual load balancing share for each data path in a network adapter team by dividing the number of bytes transferred on that data path

by a total number of bytes transferred by the network adapter team in the last time frame; compute a difference load balancing value for each data path in the network adapter team by subtracting the load balancing share of the data path from the actual load balancing share of the data path; for each data path, determine whether the load balancing share for the data path in the last time frame is less than the actual load balancing share for the data path; and in response to determining that the load balancing share is less than the actual load balancing share, adjust the load balancing share of the data path by: determining whether a difference between the load balancing share and the actual load balancing share is less than a change threshold; and in response to determining that the difference between the load balancing share and the actual load balancing share is less than the change threshold, reducing the load balancing share of the data path; selecting another data path based on the difference load balancing value of each data path; and increasing the load balancing share of the selected data path.

In regards to claim 42, the prior art does not teach under control of a failover component, intercept a command issued to a target; determine whether a mode is failover mode or failover and load balancing mode, wherein a first network adapter in a network adapter team is used to route data to the target and a second network adapter in the network adapter team is quiescent with respect to the target in the failover mode, and wherein the first network adapter and the second network adapter are used to route data to the target in the failover and load balancing mode; in response to determining that the mode is the failover and load balancing mode, work with a load

balancing component to perform load balancing based on load balancing shares of data paths in the network adapter team; determine whether the command is capable of being routed through a first network adapter in the network adapter team to the target; route the command through the first network adapter in response to determining that the command is capable of being routed through the first network adapter; route the command through a second network adapter in the network adapter team in response to determining that the command is not capable of being routed through the first network adapter; and determine whether to switch between the failover mode and the failover and load balancing mode based on the load balancing shares of data paths between the network adapters in the network adapter team and the target, wherein, when one data path has a hundred percent load balancing share, then failover mode is used.

The prior art alone or in combination fails to jointly suggest or teach the claimed combination of features as taught by the instant application. Therefore claims 1, 5, 7, 9, 10, 12-16, 20, 22, 24, 25, 27-31, 35, 37, 39, 40 and 42-45 are to be deemed allowable over prior art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SALMAN AHMED whose telephone number is (571)272-8307. The examiner can normally be reached on 9:00 am - 5:30 pm.

Art Unit: 2476

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (571)272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Salman Ahmed/

Primary Examiner, Art Unit 2476